

IN THE CLAIMS:

Please CANCEL claims 2, 3 and 15-20, without prejudice or disclaimer.

Please AMEND the claims and ADD new claims as follows:

1. (CURRENTLY AMENDED) An optical amplifying apparatus comprising:

a plurality of pumping sources generating pumping light beams at different wavelengths;

a Raman amplification medium receiving the pumping light beams from said pumping sources to amplify a main signal light beam by using stimulated Raman scattering phenomenon due to said pumping light beams;

a rare-earth-doped optical amplification medium receiving said main signal light beam amplified by said Raman amplification medium to further amplify said main signal light beam; and

a pumping light introducing means introducing a part or all of a pumping light beam at a specific wavelength of said pumping light beams as a pumping light beam for said rare-earth-doped optical amplification medium to said rare-earth-doped optical amplification medium, wherein

said plurality of pumping sources comprises a plurality of counterpropagating pumping sources generating counterpropagating pumping light beams at different wavelengths, and a copropagating pumping source generating a copropagating pumping light beam at a specific wavelength identical to at least one of said wavelengths of said counterpropagating pumping light beams generated by said counterpropagating pumping sources,

said Raman amplification medium receives said counterpropagating pumping light beams from said counterpropagating pumping sources from one direction and receives said copropagating pumping light beam from said copropagating pumping source from another direction to amplify the main signal light beam by using stimulated Raman scattering phenomenon due to said pumping light beams from said one and said another directions, and

said pumping light introducing means introduces a part or all of said counterpropagating pumping light beam at said specific wavelength of said counterpropagating pumping light beams from said counterpropagating pumping sources as a pumping light beam for said rare-earth-doped optical amplification medium to said rare-earth-doped optical amplification medium, and transmits at least said copropagating pumping light beam at said specific wavelength from said copropagating pumping source as another pumping light beam for said rare-earth-doped optical amplification medium to said rare-earth-doped optical amplification medium.

2. (CANCELED)

3. (CANCELED)

4. (CURRENTLY AMENDED) The optical amplifying apparatus according to ~~claim 2~~ claim 1, wherein

said pumping light introducing means comprises a reflective fiber grating disposed between said Raman amplification medium and said rare-earth-doped optical amplification medium, and

the reflective fiber grating reflects a part of said counterpropagating pumping light beam at said specific wavelength to said rare-earth-doped optical amplification medium, transmits the rest of said counterpropagating pumping light beam to said Raman amplification medium, and transmits said copropagating pumping light beam from said copropagating pumping source to said rare-earth-doped optical amplification medium~~sources~~ ~~intensity modulate said pumping light beams according to monitoring control information to be transmitted.~~

5. (CURRENTLY AMENDED) The optical amplifying apparatus according to claim 1, wherein

said pumping light introducing means is comprises an optical coupler disposed between said Raman amplification medium and said rare-earth-doped optical amplification medium,

said optical coupler splits said counterpropagating pumping light beam at said specific wavelength, introduces a part of said counterpropagating pumping light beam at said specific wavelength to said rare-earth-doped optical amplification medium, introduces the rest of said counterpropagating pumping light to said Raman amplification medium, and transmits said copropagating pumping light beam from said copropagating pumping source to said rare-earth-doped optical amplification medium~~to split said pumping light beam at said specific wavelength, introducing a part of said pumping light beam at said specific wavelength to said rare-earth-doped optical amplification medium, and introducing a rest of said pumping light beam to said Raman amplification medium.~~

6. (CURRENTLY AMENDED) The optical amplifying apparatus according to ~~claim~~

~~5~~claim 1, wherein said pumping light introducing means introduces a pumping light beam at a longer wavelength as one of said counterpropagating and copropagating pumping light beam beams at said specific wavelength to said rare-earth-doped optical amplification medium.

7. (CURRENTLY AMENDED) The optical amplifying apparatus according to ~~claim 5~~claim 4, wherein said pumping light introducing means introduces a pumping light beam at a longer wavelength as one of said counterpropagating and copropagating pumping light beams at said specific wavelength to said rare-earth-doped optical amplification medium ~~said pumping sources intensity-modulate said pumping light beams according to monitoring control information to be transmitted.~~

8. (CURRENTLY AMENDED) The optical amplifying apparatus according to ~~claim 4~~claim 5, wherein said pumping light introducing means introduces a pumping light beam at a longer wavelength as one of said counterpropagating and copropagating pumping light beams at said specific wavelength ~~said pumping light beam at said specific wavelength to said rare-earth-doped optical amplification medium.~~

9. (CURRENTLY AMENDED) The optical amplifying apparatus according to ~~claim 8~~claim 1, wherein said pumping sources intensity-modulate said pumping light beams according to monitoring control information to be transmitted.

10. (CURRENTLY AMENDED) The optical amplifying apparatus according to ~~claim 4~~claim 5, wherein said pumping sources intensity-modulate said pumping light beams according to monitoring control information to be transmitted.

11. (CURRENTLY AMENDED) An optical amplifying apparatus according to claim 5, wherein said pumping sources intensity-modulate said pumping light beams according to monitoring control information to be transmitted comprising:

_____ a plurality of counterpropagating pumping sources generating pumping light beams at different wavelengths;

_____ a copropagating pumping source generating a pumping light beam at a specific wavelength identical to at least any one of said wavelengths of said pumping light beams generated by said counterpropagating pumping sources;

_____ a Raman amplification medium receiving pumping light beams from said

~~counterpropagating pumping sources from one direction and receiving said pumping light beam from said copropagating pumping source from other direction to amplify a main signal light beam by using stimulated Raman scattering phenomenon due to said pumping light beams from said both directions;~~

~~— a rare earth-doped optical amplification medium receiving said main signal light beam amplified by said Raman amplification medium to further amplify said main signal light beam; and~~

~~— a pumping light introducing means introducing a part or all of said pumping light beam at said specific wavelength of said pumping light beams from said counterpropagating pumping sources as a pumping light beam for said rare earth-doped optical amplification medium to said rare earth-doped optical amplification medium, and transmitting at least said pumping light beam at said specific wavelength from said copropagating pumping source as another pumping light beam for said rare earth-doped optical amplification medium.~~

12. (CURRENTLY AMENDED) The optical amplifying apparatus according to claim 11claim 6, wherein said pumping sources intensity-modulate said pumping light beams according to monitoring control information to be transmitted ~~said pumping light introducing means is a reflection type fiber grating disposed between said Raman amplification medium and said rare earth-doped optical amplification medium to reflect a part of said pumping light beam at said specific wavelength to said rare earth-doped optical amplification medium, transmitting a rest of said pumping light beam to said Raman amplification medium, and transmitting said pumping light beam from said copropagating pumping source to said rare earth-doped optical amplification medium.~~

13. (CURRENTLY AMENDED) The optical amplifying apparatus according to claim 12claim 7, wherein said pumping sources intensity-modulate said pumping light beams according to monitoring control information to be transmitted ~~said pumping light introducing means introduces a pumping light beam at a longer wavelength as said pumping light beam at said specific wavelength to said rare earth-doped optical amplification medium.~~

14. (CURRENTLY AMENDED) The optical amplifying apparatus according to claim 12claim 8, wherein said pumping sources intensity-modulate said pumping light beams according to monitoring control information to be transmitted.

15-20. (CANCELED)

21. (NEW) An apparatus comprising:

a Raman amplification medium through which a signal light travels;

a rare-earth-doped optical amplification medium through which the signal light travels after traveling through the Raman amplification medium; and

a fiber grating positioned between the Raman amplification medium and the rare-earth-doped optical amplification medium, wherein

a first pump light which includes pump light at a specific wavelength is provided to the Raman amplification medium so that the first pump light copropagates through the Raman amplification medium with the signal light and is thereafter transmitted through the fiber grating to then copropagate through the rare-earth-doped optical amplification medium with the signal light,

a second pump light which includes pump light at a plurality of wavelengths including the specific wavelength is provided to the fiber grating so that the second pump light at wavelengths other than the specific wavelength is transmitted through the fiber grating to the Raman amplification medium and then counterpropagates through the Raman amplification medium as the signal light travels through the Raman amplification medium,

the fiber grating reflects the second pump light at the specific wavelength provided to the fiber grating so that the reflected second pump light copropagates through the rare-earth-doped optical amplification medium with the signal light,

the apparatus thereby causing the signal light to be Raman amplified as the signal light travels through the Raman amplification medium in accordance with the first pump light provided to the Raman amplification medium and the second pump light transmitted to the Raman amplification medium by the fiber grating, and

the apparatus thereby causing the signal light to be amplified as the signal light travels through the rare-earth-doped optical amplification medium in accordance with the first pump light transmitted to the rare-earth-doped optical amplification medium through the fiber grating and the second pump light reflected by the fiber grating.

22. (NEW) An apparatus comprising:

a Raman amplification medium through which a signal light travels;

a rare-earth-doped optical amplification medium through which the signal light travels after traveling through the Raman amplification medium; and

an optical coupler positioned between the Raman amplification medium and the rare-earth-doped optical amplification medium, wherein

a first pump light which includes pump light at a specific wavelength is provided to the Raman amplification medium so that the first pump light copropagates through the Raman amplification medium with the signal light and is thereafter introduced by the optical coupler to the rare-earth-doped optical amplification medium to then copropagate through the rare-earth-doped optical amplification medium with the signal light,

a second pump light which includes pump light at a plurality of wavelengths including the specific wavelength is provided to the optical coupler so that the second pump light at wavelengths other than the specific wavelength is introduced by the optical coupler to the Raman amplification medium to then counterpropagate through the Raman amplification medium as the signal light travels through the Raman amplification medium,

the optical coupler causes the second pump light at the specific wavelength provided to the optical coupler to be introduced to the rare-earth-doped optical amplification medium so that the introduced second pump light copropagates through the rare-earth-doped optical amplification medium with the signal light,

the apparatus thereby causing the signal light to be Raman amplified as the signal light travels through the Raman amplification medium in accordance with the first pump light provided to the Raman amplification medium and the second pump light introduced to the Raman amplification medium by the optical coupler, and

the apparatus thereby causing the signal light to be amplified as the signal light travels through the rare-earth-doped optical amplification medium in accordance with the first pump light introduced to the rare-earth-doped optical amplification medium by the optical coupler and the second pump light introduced to the rare-earth-doped optical amplification medium by the optical coupler.